

ON A NEW SPECIES OF VESPERTILIO, *by* G. E. DOBSON, B. A., M. B.,
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For a period of ten years, the history of the Indian *Cheiroptera* has been in abeyance. In the beginning of 1861, Mr. Blyth published his last remarks on some new species of this order in the Proceedings of the Asiatic Society, and so brought to a close his contributions to our knowledge of this very interesting order of Mammals, an order which he enlarged by the addition, not only of several new species but also a new genus, recording also in the Journal of the Society his original observations on the habits of some individuals.* In Dr. Jerdon's 'Mammals of India' published in 1867, the order is systematically treated of, but no species not included in Blyth's catalogue are described. In Europe during the past ten years the progress of knowledge in this direction has not been great, and the *Cheiroptera* have in common with other orders of the higher classes of animals shared equal neglect, since naturalists began to examine into final causes, and in the study of developmental theories confined the greater portion of their attention to the extreme limits of the zoological series — to Monkeys and Monads.

I have, therefore, much satisfaction in bringing to the notice of zoologists a new species of Insectivorous_bats.

Vespertilio auratus.† Pl. x, figs. 1—2.

Top of the head very slightly elevated, thickly covered with woolly hair which extends forwards upon the face, forming a fringe

* His paper on the blood-thirsty propensities of some individuals of the genus "*Megaderma*" will well repay perusal. See J. A. S. Beng., vol. xi.

† In the abstract of this paper in the Proceedings Asiatic Society for March, 1871, this species was referred to as *Kerivoula aurata*, but taking *Tomes'* and *Peters's* view of classification, I believe, that *Kerivoula* can be regarded only as a sub-genus of *Vespertilio*. A figure of the head and ear of the species will be published in the next number of the Journal.

In the same number of the Proceedings I have made reference to a peculiar *Murina* like bat which I believed to belong to a new genus, for which I proposed

along the margin of the upper lip, almost concealing the minute eyes, and leaving the tip of the nose alone uncovered.

Ears ovate, with obtusely pointed tips directed outwards; outer margin concave immediately beneath the tip, becoming gradually convex and forming a small lobe near the base: tragus long, narrow, and obtusely pointed; inner margin straight, outer margin curved outwards at the base for about one-third its length, then ascending straight, equally inclined to the inner margin; on the curve near the base a very small lobulus is placed, which is not succeeded by an emargination. Nose projecting slightly beyond upper lip, with a very shallow emargination between the nostrils which open sublaterally.

Thumb rather long, basal phalanx less than half its length; foot moderately large, toes more than half its length. Wing membrane very broad, attached close to base of outer toe, beautifully variegated with orange and brown-black. The portions of dark coloured membrane are triangular in form, and occupy the spaces between the second and third, and third and fourth fingers, and also the space included between the fourth finger and a line drawn from the carpus to the angle. All the remaining portions of membrane, including the ears and interfemoral membrane, are orange. The orange colour extends in narrow lines along the fingers, the bones of which are of the same hue, and is dispersed over the dark triangular spaces in dots and streaks.

The fur of the back is everywhere thick and woolly, tricoloured, dusky at the base for about one-third its length, then light fawn colour, the ends of the hairs tipped with light golden brown; beneath light fawn colour, the hairs paler at the base.

Above, the fur of the back extends upon the humerus and ante-humeral membrane for half their length, on the wing membranes it occupies but a very small space, about 0".3 wide, termi-

the name *Stenopterus*. I have since examined several specimens of *Murina swilla* from the same locality, and it appears to me very probable that the narrowness of the wing in the so-called *Stenopterus*, and the smaller number of phalanges, has to be attributed to an accidental abnormality in a specimen of the above noticed *Murina*. I, therefore, defer characterizing that specimen until I may be enabled to trace its exact relation to *Murina*. The name *Stenopterus*, having been already used in other branches of Zoology, cannot again be employed in this case.

nating rather abruptly; behind, it passes on to the inter-femoral membrane covering nearly half its surface and, leaving the posterior half of the interfemoral membrane, the calcanea and metatarsi bare, reappears on the back of the toes.

Beneath, the fur of the thorax extends along the humerus to the elbow joint, and as far as a line drawn from the elbow to the knee joint the wing membrane is covered with a few scattered hairs; behind, the fur of the abdomen extends backwards upon the inter-femoral membrane, rather densely at the root of the tail, but quickly thinning out into a few, very short, scattered hairs which extend over half its surface. The back of the ear is naked except at the base, in front it is clothed with a few short hairs.

Dentition. In. $\frac{2-2}{6}$; p. m. $\frac{2-2}{3-3}$; m. $\frac{3-3}{3-3}$.

Length, head and body,	2·4 inches.
„ tail,	1·9 „
„ head,	0·8 „
Height of ear,	0·6 „
Breadth „	0·35 „
Length of tragus,	0·35 „
Breadth „ (greatest),	0·07 „
Length of forearm,	1·9 „
„ 2nd finger,	3·3 „
„ 4th „	2·7 „
„ thumb,	0·45 „
„ tibia,	0·9 „
„ foot and claws,	0·4 „
„ calcaneum,	0·8 „
Expanse,	12·6 „

On first examining the specimen, from which the foregoing description is obtained, I was inclined to believe it might be referred to either *V. formosus* (Hodgs.), or *V. rufo-pictus* (Waterh.), but a more careful comparison with the descriptions of these species given by Mr. Tomes in the Ann. and Mag. Nat. Hist. rendered it evident that it differs, not only in dentition, but also in several other important characters, as the form of the tragus, the position of the emargination on the outer edge of the ear, the distribution and colour of the fur, &c.

Loc. Darjeeling.

CONTRIBUTIONS TO INDIAN CARCINOLOGY.—ON INDIAN AND MALAYAN
TELPHUSIDÆ, PART I,—by JAMES WOOD-MASON of *Queen's College,
Oxford*.

(With Plates XI and XII.)

[Read 5th April, received 25th April, 1871.]

In the year 1869,* M. Alphonse Milne-Edwards published a Revision of the genus *Telphusa* with descriptions of some new forms which brought up the number of known species to thirty-six.

In 1868,† E. von Martens (in a paper entitled "*Ueber einige Ost-asiatische Süßwasserthiere*") described *T. Borneensis* from the rivers of Borneo.

In this, the first part of my paper on the TELPHUSIDÆ, which will be continued in succeeding numbers of the Journal, I shall give descriptions of fifteen new species; of which two belong to Milne-Edwards' sub-genus *Paratelphusa*.

For the opportunity of drawing up these descriptions, I am especially indebted to my friend, Dr. F. Stoliczka, who has also added to the Museum collections under my care many interesting species of marine Crustacea; to Dr. Francis Day; to my colleague Dr. J. Anderson who collected several species during the Yunan expedition; to Major Godwin-Austen and to Captain Stewart-Pratt of Morar; to Messrs. W. T. Blanford, V. Ball, H. L. Houghton and above all to that indefatigable observer Mr. S. E. Peal of Sibsaugur who has so greatly enriched the collections of the Indian Museum in every group of the Arthropoda.

The TELPHUSIDÆ are essentially fresh-water Crustaceans, but in India are commonly called land-crabs from the circumstance that many of the species are able to live for a very considerable time out of water, far removed from rivers, tanks, marshes, jhils, &c., provided that the air that enters the branchial chamber is sufficiently saturated with moisture to prevent the branchiæ from becoming desiccated, and so unfitted for the performance of their respiratory functions. My freind, Captain Stewart Pratt, forwarded to me, at the commencement of the present hot season, specimens of *Telphusa*

* Nouvelles arch. du Mus., 1869, tom. V, p. 161—191, pl. 8—11.

† Wiegmann's Archiv für Naturg., xxxiv, Jahrg., 1 Bd., p. 18.

Indica which he had obtained from holes dug by the crabs in the neighbourhood of water; the bottoms of these holes were found to be below the level of the neighbouring water, and there appears to be good reason for believing that these creatures deepen their holes *pari passu* with the change in the level of the water, so that moisture sufficient for the maintenance of their branchiæ in a state fit for respiration may reach their retreats. Col. Sykes' account* of the so-called land-crabs of the Dekhan, prefixed to Prof. Westwood's description of *Telphusa cunicularis* = *Indica*, Latr., gives a good idea of the terrestrial habits, the prodigious numbers, and the extent of the burrowings of these creatures.

Stimpson,† influenced by the feeble development of the post-frontal crest and by the absence of the epibranchial teeth in certain species, but especially by their terrestrial habits, gave them the generic appellation of *Geotelphusa*. But, as M. Alphonse Milne-Edwards justly remarks, there appear to be no sufficient reasons for the foundation of this new genus, the definition of the limits of such an artificial group being difficult, because there are species possessing all the essential characters of *Telphusa*, in which the frontal crests become more and more obliterated and the epibranchial teeth scarcely perceptible.

The land-crabs, properly so-called, belong to the GECARCINIDÆ, a family of the CRUSTACEA GRAPSOIDEA of Dana (= CATOMETOPA, M. Edw., *minus* TELPHUSIENS), and are well known from the accounts of the extraordinary periodical migrations of the species of the West Indian genus *Gecarcinus* to the sea for the purpose of depositing their eggs or brood. This family is represented in India by *Cardisoma* which is widely distributed, and by *Gecarcinuca Jacquemontii*, M.—Edw., occurring in great numbers in company with *Telphusa Guerini*, M.—Edw., at Khandalla in the Western Ghâts.

Dana in his great work on the Crustacea, acknowledging the greater affinities of TELPHUSIDÆ to the CANCROIDEA, to which they are united by such forms as *Eriphia*, removed them from their

* Trans. Entom. Soc. Lond. vol. i, p. 181.

† Proc. Acad. Nat. Sc. Phil. 1858, p. 179.

association with the GRAPSIDÆ in the CATOMETOPA, and placed them in their more natural position next to the CANCROIDEA TYPICA under the legionary name of the TELPHUSINEA or CANCROIDEA GRAPSIDICA, on the ground that they possess the same number of branchiæ, a similar abdomen, and have the male copulatory organs similarly inserted in the basilar joint of the last pair of ambulatory legs, and covered from their origin by the abdomen. The TELPHUSIDÆ, however, evidently constitute a transition between the CANCROIDEA TYPICA and the GRAPSOIDEA, as may be seen from their general Grapsoid form.

The family TELPHUSIDÆ is divisible into the following genera and subgenera:—

TELPHUSA, (Syn. *Geotelphusa*): *Hab.* Southern Europe, Africa, India and its islands, Burma, China, Australia, Chili.

PARATELPHUSA: *Hab.* South-Eastern Bengal, Assam, Burma, Pegu, China, Siam and the Indo-Malayan Archipelago.

BOSCIA, DILOCARCINUS, SYLVIOCARCINUS, POTAMOCARCINUS, TRICHODACTYLUS, &c.: *Hab.* Tropical America.

DECKENIA: *Hab.* Eastern Africa (Zanzibar). This genus resembles the TELPHUSIDÆ in the development of the branchial regions and in the position of the male copulatory organs, but the structure of the external maxillipedes and position of the efferent orifices of the branchial cavities recalls the disposition of these parts in the Oxystomatous Crustacea.

Of the developmental history of the TELPHUSIDÆ nothing is, I believe, known, and I extremely regret that I have not yet had an opportunity of making observations on this head; but this I can say, that the ova are of large size and few in number. Whether, however, direct development without metamorphosis is correlated with the large size of the eggs and their fewness in number, as in the single instance amongst the Brachyura (in *Gecarcinus*), investigated by Prof. Westwood, or whether the young commence their existence as Zoëas, as in another species of the same genus, noted by Thomson, must be left for future observations. Arguing from what happens in the case of fresh-water branchiferous Gasteropods,* the

* Troschel, Hand. der Zoologie.

young of which possess no ciliated buccal lobes, while these are possessed by the allied LITTORINIDÆ, and from other instances in which fresh-water allies of marine animals, which do undergo a metamorphosis, are ametabolous, it is probable that the young of the TELPHUSIDÆ leave the egg in a condition differing but little from that of their parents.

CRUSTACEA CANCROIDEA.

TELPHUSINEA VEL CANCROIDEA GRAPSIDICA.

Fam.—TELPHUSIDÆ.

Genus.—TELPHUSA, Latreille.

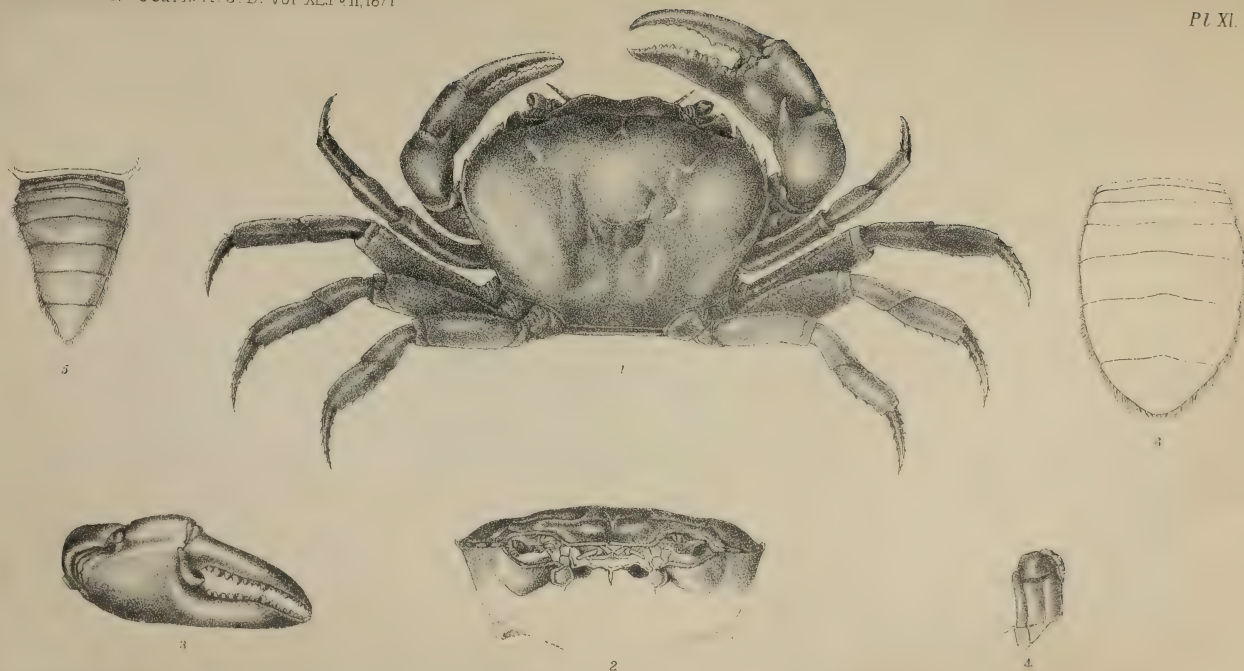
Diagnosis.—Carapace broader than long, with the interregional furrows little marked, with the exception of the cervical suture which is occasionally very deeply impressed. Front deflexed, generally with a straight free margin; orbits large with their infero-internal angle sending upwards a stout vertical tooth to about against the antennæ, which are exceedingly small and lodged in the inner canthus of the eye. Antennulary pits pretty long, but very narrow. External maxillipedes large with their third joint subquadrate, with the antero-internal angle truncated and giving insertion to the fourth joint. Sternal region almost as long as broad. Abdomen of both males and females constituted by 7 free somites.

Sub-genus.—PARATELPHUSA, M.-Edw.

The species referable to the subgenus *Paratelphusa* are further characterized by the presence of an acute spine on the superior angle of the meropodites of the chelipedes, situated just behind the constriction near the distal articular end of the joint; the inferior angles of the joint being rounded off, and devoid of the tubercles which are invariably present in *Telphusa*.

Paratelphusa Dayana, n. sp. Pl. XI.

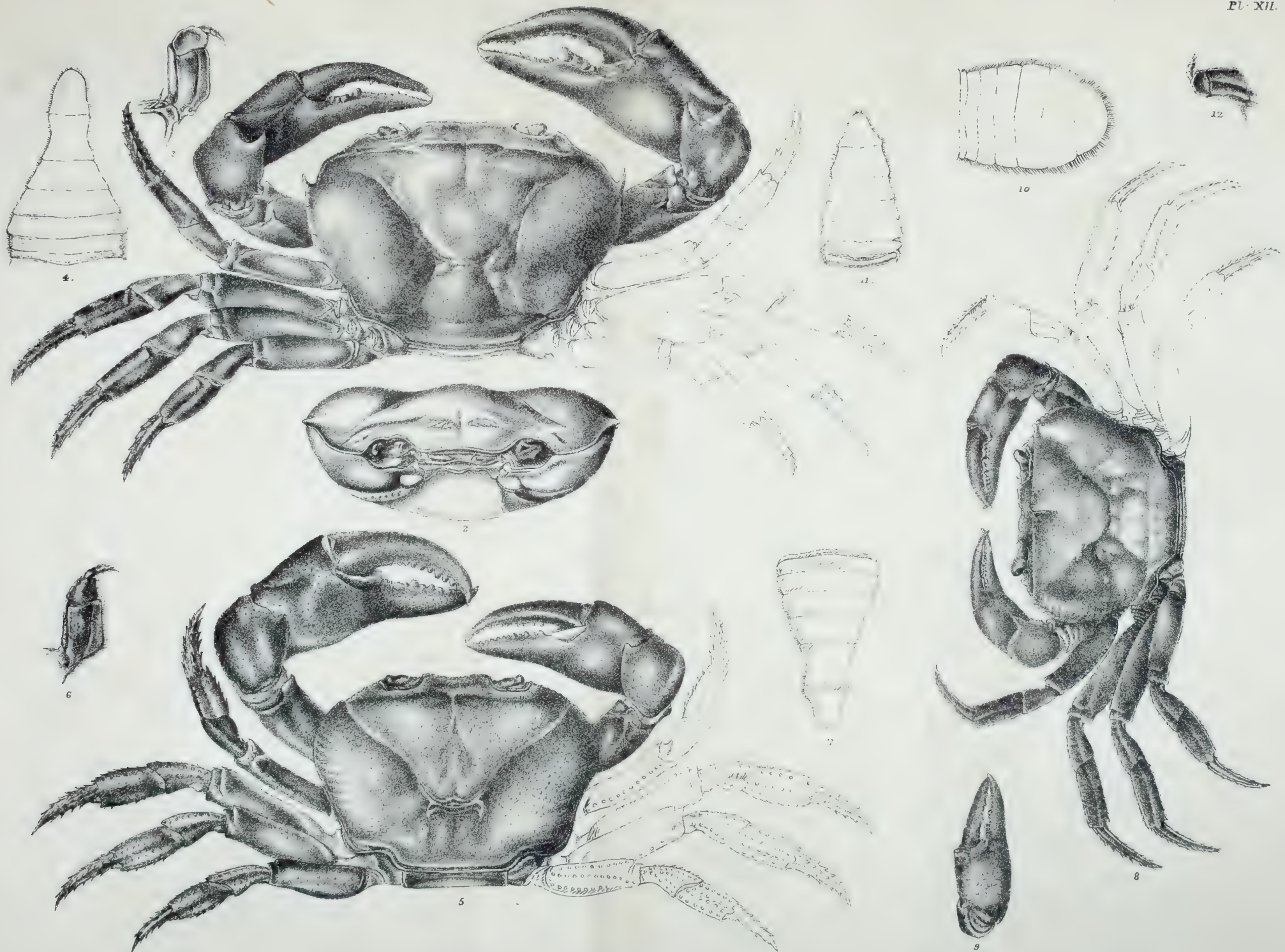
The carapace is much broader than long, the greatest breadth being measured between the points of the last epibranchial tooth, extremely convex, smooth, punctate, and appears finely granular under an ordinary lens. The branchial lobes are greatly swollen and are not sub-divided into anterior and posterior divisions; the mesial crescentic portion of the cervical suture is distinctly marked



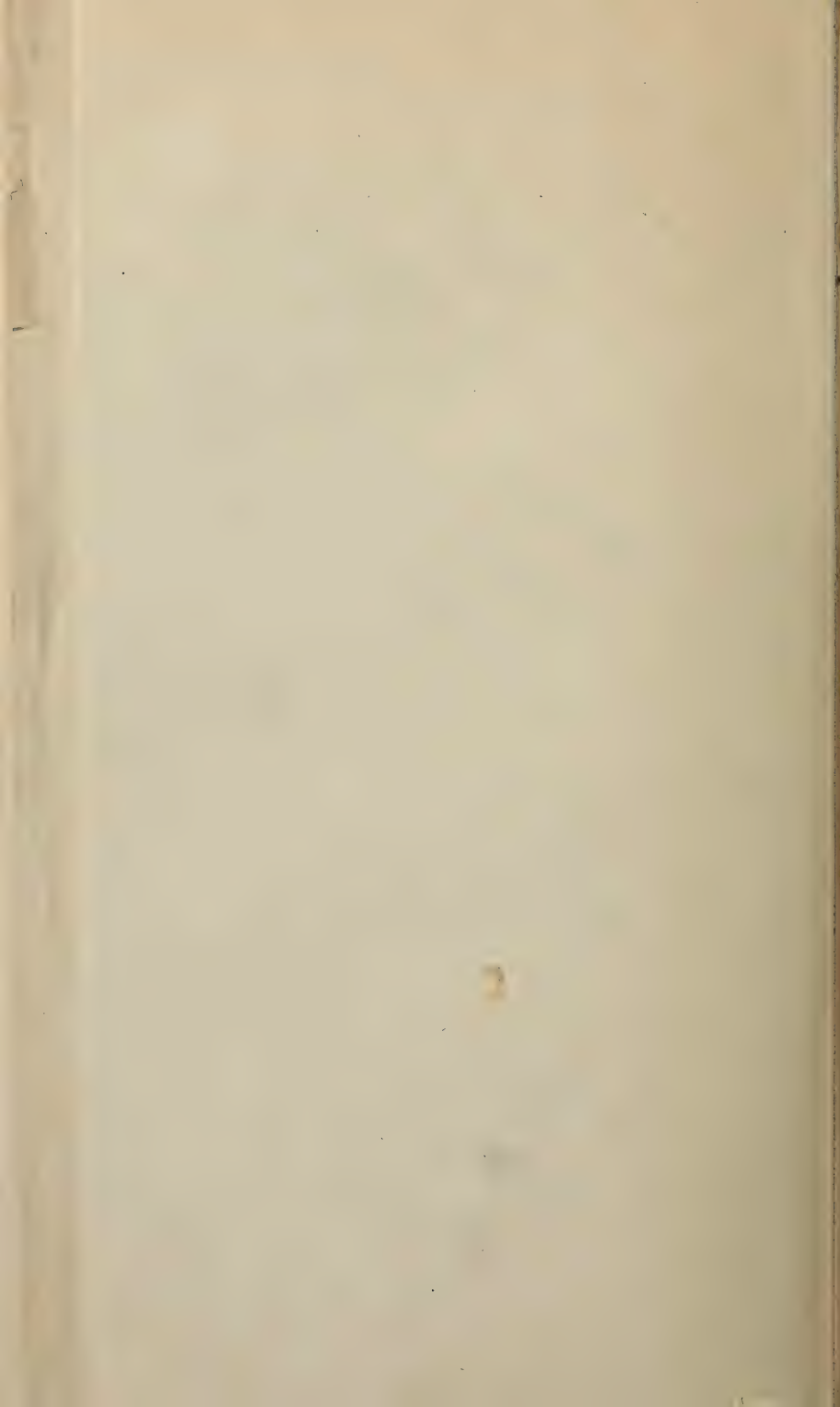
S. Sedgfield. Lith.

Paratelpusa Dayana. n. sp.

Calappa



1-4. *Paratelphusa spinigera*, p. 194. 5-7. *Telphusa lugubris*, p. 197. 8-12. *Telphusa Stoliczkana*, p. 199.



and continued nearly to the level of the last epibranchial tooth, where it ends to appear again opposite the second tooth, whence it passes to the edge of the post-frontal crest which it but faintly indents. The post-frontal ridge is well marked and, between the point at which its edge is notched by the passage across it of the cervical suture and the anterior epibranchial tooth, is crenulated; the cardiac lobe is marked off from the branchial by two shallow almost linear depressions on each side of the middle line, and in front from the urogastric by a line curving almost concentrically with the convexity of the cervical suture. The epigastric lobes are slightly wrinkled or foveate anteriorly, and advanced beyond the line of the post-frontal crest as in *Paratelphusa spinigera*, and separated from one another by the mesogastric suture, which rapidly bifurcates as it passes backwards, appearing as a short V-shaped impression on the carapace, the space intercepted between the arms of the V being the point of the narrow anterior prolongation of the mesogastric lobe.

The antero-lateral margins are inclined and armed, not counting the blunt extra-orbital tooth with its curved external margin, each with four acute, spiniform epibranchial teeth of which the most anterior is the largest; the rest are equal in size to, and equidistant from each other; from the last a short well defined keel, obscurely crenated on its inner edge, passes backwards and inwards on to the carapace which is marked with a few small straggling tubercles along the line of the epibranchial spines. Front very broad especially at base, punctate, finely granular and transversely wrinkled, its free margin is bayed in the middle line, but not greatly lamellar and projecting forwards over the epistomial region, as in *Paratelphusa sinensis*, M.-Edw., and in *P. spinigera*.

The inflected portion of the carapace is finely tuberculated anteriorly; anterior pleural lobe distinct and almost devoid of tubercles; posterior pleural smooth, thickly granulated where it bounds the anterior pleural.

The anterior boundary of the epistoma is crenulated; its posterior margin is notched on each side of the middle line from which a long sharp process extends downwards between the palpiform appendages of the external maxillipedes; this process does not

correspond exactly with the triangular process of the epistoma in other species of *Telphusa*, but is the greatly developed median palatal ridge; externally to each notch the posterior margin of the epistoma forms two distinct lobes with granulated edges. The second joint of the external maxillipedes is punctate and its external margin crenulated. The third joint is much broader than long and has its external and anterior angles well rounded off and distinctly granular; the exopodite is crenulated on its internal margin. The abdomen of the male differs greatly from that of *Paratelphusa spinigera*, having the form of an isosceles triangle.

The chelipedes are greatly unequal in size, both in males and females, especially in the former; the meropodites have their ventral angles rounded off as in *Paratelphusa spinigera*, their outer or posterior face rugose, their posterior angle also rugose and armed with a sharp spine arising just proximally to the constriction near the distal articular end; carpopodites faintly rugose above, armed with a single excessively long, stout spine; penultimate joint obsoletely tubercular above, externally and internally all but smooth; in the larger claw a considerable hiatus exists between the dentated margin of the prolongation of this joint and that of the dactylopodite, which in the smaller claw is throughout its length in complete contact with the immoveable arm of the pincers.

The terminal joints of the ambulatory legs are extremely slender, acute, and armed with fine sharp spines.

Breadth, 42 mm.

Length, 31 mm.

Hab. Mandélé and Prome, Upper Burma.

Plate XI. Fig. 1. *Paratelphusa Dayana*, of the natural size; 2. Front view. 3. External view of right chela. 4. External maxillipede. 5. Abdomen of the male. 6. The same of a female.

PARATELPHUSA SPINIGERA, Pl. XII, Figs. 1-4.

'*Telphusa spinigera*,' White, MSS. List of the specimens of Crustacea in the collection of the British Museum, p. 30, (no description).

Carapace very greatly broader than long, smooth except on the postero-lateral margin which bears numerous wrinkles; these are con-

tinued neither on to the inflected portion of the carapace, nor on the posterior pleural region; front broad, punctate, projecting pent-house fashion over the antennular pits between which it wholly forms the broad septum; its free margin is sinuous, presenting mesially a broad shallow bay; orbital borders indistinctly crenulated; the anterior pleural or subhepatic regions are faintly marked off from the inflected portion of the carapace which bounds them externally, while they are most distinctly separated from those portions of the posterior pleural lobes which pass forwards, so as to form the parallel boundaries of the buccal frame by a deep groove, running outwards and backwards from the epistoma; this is deeply excavated and its posterior margin sends backwards in the middle line a short broad-based triangular projection. The extra-orbital angle is somewhat obtuse and is widely separated from the single acute forwardly directed epibranchial spine, in the rear of which is a very short smooth crest. Branchial lobes enormously swollen and not subdivided, separated from the gastric region by the deeply impressed cervical suture which does not pass through the postfrontal crest; this subsides without reaching the acute, arched antero-lateral margin, and is interrupted by the advanced position of the epigastric lobes; these are in front rugose and faintly distinguishable from the rest of the gastric region, but separated from one another by a short mesogastric furrow. A very deep muscular impression is visible at each postero-lateral angle of the gastric area. Cardiac region convex, distinct. Two large puncta, which frequently become confluent, mark the post-frontal furrow behind the external canthus of the eye. Chelipedes smooth and extremely unequal both in males and females, in some the right, in others the left being the larger; meropodites are smooth and their angles rounded, the upper one only being slightly rugose and bearing proximally to the constriction at its distal extremity a sharp spine, as in the rest of the species of the subgenus. The upper surfaces of the carpopodites are transversely convex; their inner margins armed with an exceedingly stout sharp spine; the penultimate joint is internally smooth, convex and punctate, the puncta being disposed in longitudinal series; the dactylopodites are slender, much curved, longitudinally punctate, minutely granular and only in contact with the extremity of the produced

portion of the preceding joint in adult individuals. The ambulatory legs and the dorsal edges of their meropodites are perfectly smooth.

Breadth, 58 mm.

Length, 40 mm.

Hab. I found this interesting species exceedingly abundant in the tanks of Calcutta. It has recently been collected by my servant, who accompanied Dr. Day on a trip to the upper waters of the Ganges, at Hurdwar and at Roorkee, where it lives in the river itself and in the contiguous ponds and marshes.

Plate XII. Fig. 1. *Paratelphusa spinigera* of the natural size. 2. Front view. 3. External maxillipede. 4. Abdomen of the male.

TELPHUSA INDICA.

Telphusa Indica, Latreille, Encyclo. Méth., Insectes, t. X, p. 563;—Guérin-Méneville, Iconographie du Règne animal, Crust., pl. iii, fig. 3;—Milne-Edwards, Hist. Nat. des Crust., t. II, p. 13; and Voy. de M. Jacquemont dans l'Inde, p. 7, pl. ii, fig. 1—4;—Alph. Milne-Edwards, Révision du genre *Thelphusa* et description de quelques espèces nouvelles.

Thelphusa cunicularis, Westwood, Trans. Entom. Soc., London, vol. i, p. 183, pl. xix, fig. 1—6.

The largest specimen in my possession measures in a straight line in breadth 83 mm., in length 59 mm., and was collected with two others at Singhur near Poona in running water. It was in this neighbourhood also that M. Jacquemont collected his specimens. Col. Sykes, in his account of the land-crabs of the Dekhan, prefixed to Prof. Westwood's description of the species under the name of *Thelphusa cunicularis*, mentions its occurrence in the same place, and in all the valleys and on the most elevated tablelands of the Ghâts at from 2,000 to 5,000 feet above the sea-level, and is of opinion that it does not extend more than fifteen or twenty miles to the eastward of the Ghâts. Mr. W. T. Blanford has, however, brought specimens from S. E. Berar, west of Chanda, and I am indebted to Mr. V. Ball for examples from near Chota Nagpúr. One of the Museum collectors lately obtained individuals from Ranígunj, a place within 120 miles of Calcutta. On the Parisnáth hill it occurs up to about 3,000 feet. It is as yet